Space Weather Forecast

Issued on Tuesday 25 March 2025 at 13:01 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor/Moderate Geomagnetic storms throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low in the past 24 hours, with occasional Common-class flares. There are currently six sunspot regions on the Earth-facing disc, all of which are small and magnetically simple. The largest of which is approaching the northwest limb. A new spot has emerged around the northeast limb, this appears to have numerous spots and is small to moderate in size.

No Earth-directed Coronal Mass Ejections (CME) were observed leaving the Sun during the 24 hour period.

Solar Wind / Geomagnetic Activity: The solar wind speeds were initially at slightly elevated levels, 430km/s, before gradually easing to slow-ambient wind speeds, at around 370km/s. The Interplanetary Magnetic Field, had some brief weak intervals before 24/2100 UTC before becoming steadily moderate. The north-south component, remained weak and variable in direction. Geomagnetic activity was at Quiet to Unsettled levels (Kp2-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low solar activity is expected, with a slight chance of isolated Moderate-class flares over the next four days.

Solar Wind / Geomagnetic Activity: There are currently no Earth-directed CMEs in the forecast, with the main driver for any enhanced geomagnetic activity likely to be from a fast wind originating from a large coronal hole. Solar winds are expected to continue at slow-ambient levels to start before probably becoming elevated to strong levels with the expected arrival of the fast winds from the coronal hole from later day 1 (25 Mar), lasting through day 2 into day 3 (26-27 Mar), then gradually easing day 4 (28 Mar).

Quiet conditions initially will probably become Unsettled to Active (Kp3-4), with an increasing Chance of G1-G2/Minor-Moderate storms (Kp5-6) due to coronal hole fast wind influences,

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peaking day 2 or day 3 (26/27 Mar) before easing day 4 (28 Mar).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to persist at background levels, with a slight chance of enhancement from any larger flares.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	No	30	50	50	30
Strong	**G3**	No	1	5	5	1
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 (M Class)**	No	20	20	15	15
Very Active	**R3-R5 (X Class)**	No	1	1	1	1

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	5	3	1
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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